

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**  
**Re: Appeal to the Board of Patent Appeals and Interferences**

Appellants: MacDonald et al.	)	Examiner: Eric E. Silverman
	)	
Serial Number: 10/686,933	)	Group Art Unit: 1618
	)	
Filed: October 16, 2003	)	Customer Number: 22827
	)	
Confirmation No: 4589	)	Deposit Account: 04-1403
	)	
Title: Method for Reducing Odor Using Colloidal Nanoparticles	)	Attorney Docket No: KCX-665 (19232)
	)	

1. ☐ **NOTICE OF APPEAL:** Pursuant to 37 CFR 41.31, Applicant hereby appeals to the Board of Appeals and interferences from the last decision of the Examiner.
2. ☐ **PRE-APPEAL BRIEF REQUEST FOR REVIEW:** Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request. This request is being filed with a Notice of Appeal. The review is requested for the reason(s) stated on the attached sheet(s) [No more than five (5) pages may be provided.]
3. ☒ **BRIEF** on appeal in this application pursuant to 37 CFR 41.37 is transmitted herewith (1 copy).
4. ☐ An **ORAL HEARING** is respectfully requested under 37 CFR 41.47 (due within two months after Examiner's Answer).
5. ☐ Reply Brief under 37 CFR 41.41(b) is transmitted herewith (1 copy).
6. ☐ "Small entity" verified statement filed: [ ] herewith [ ] previously.

7. **FEE CALCULATION:**

	<b>Fees</b>
If box 1 above is X'd enter \$ 540.00	\$ <u>0.00</u>
If box 2 above is X'd enter \$ 0.00 (no fee)	\$ <u>0.00</u>
If box 3 above is X'd enter \$ 540.00	\$ <u>540.00</u>
If box 4 above is X'd enter \$ 1,080.00	\$ <u>0.00</u>
If box 5 above is X-d enter \$ 0.00 (no fee)	\$ <u>0.00</u>

**PETITION** is hereby made to extend the original due date of N/A, hereby made for an extension to cover the date this response is filed for which the requisite fee is enclosed (1 month \$130; 2 months \$490; 3 months \$1,110; 4 months \$1,730, 5 months \$2,350) \$ 0.00

**SUBTOTAL:** \$ 540.00

Less any previous extension fee paid since above original due date. - \$ 0.00

Less any previous fee paid for prior Notice of Appeal since Board did not render a decision on the merits. MPEP § 1204.01 - \$ 0.00

Less any previous fee paid for submitting Brief on prior Appeal since  
Board did not render a decision on the merits. MPEP § 1204.01 - \$ 540.00

**SUBTOTAL:** \$ 0.00

If "small entity" verified statement filed ☐ previously,  
☐ herewith, enter one-half (1/2) of subtotal and subtract - \$ 0.00

**TOTAL FEE ENCLOSED:** \$ 0.00

- ☐ Fee enclosed.
- ☐ Charge fee to our Deposit Account/Order Nos. in the heading hereof (for which purpose one additional copy of this sheet is attached)
- ☒ Charge to credit card (attach Credit Card Payment Form – PTO 2038)
- ☐ Fee NOT required since paid in prior appeal in which the Board of Appeals did not render a decision on the merits.

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The Commissioner is hereby authorized to charge any fee specifically authorized hereafter, or any fees in addition to the fee(s) filed, or asserted to be filed, or which should have been filed herewith or concerning any paper filed hereafter, and which may be required under Rules 16-18 (deficiency only) now or hereafter relative to this application and the resulting official document under Rule 20, or credit any overpayment, to our Account No. shown in the heading hereof. This statement does not authorize charge of the issue fee in this case.

**DORITY & MANNING ATTORNEYS AT LAW, P.A.**

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Date: September 16, 2009

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I hereby certify that this correspondence and all attachments and any fee(s) are being electronically transmitted via the internet to the U.S. Patent and Trademark Office using the Electronic Patent Filing System on September 16, 2009.

Sandra S. Perkins

(Typed or printed name of person transmitting documents)

  
(Signature of person transmitting documents)

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Colloidal Nanoparticles	)	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**SUPPLEMENTAL BRIEF ON APPEAL**

Appellants submit the following supplemental brief on appeal in accordance with 37 C.F.R. § 41.37. This supplemental brief is submitted for the purposes of correcting the "Grounds of Rejection to Be Reviewed on Appeal" section at the request of Dr. Silverman. Appellants do not believe that any additional fees are required by this Supplemental Brief.

**1. REAL PARTY IN INTEREST**

The real party in interest in this matter is the assignee of record, Kimberly-Clark Worldwide, Inc.

**2. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to the Appellants or the Appellants' legal representative which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**3. STATUS OF CLAIMS**

Currently, claims 31, 35-48, and 50-53 remain pending in the present application including independent claim 31. Claims 1-30, 32-34, and 49 were previously cancelled from the present application. All pending claims are attached hereto in the Claims Appendix.

In the Final Office Action of December 15, 2008, claims 31, 35-48, and 50-53 were finally rejected under 35 U.S.C. § 103(a).<sup>1,2</sup>

The rejections of claims 31, 35-48, and 50-53 under §103(a) are hereby appealed.

**4. STATUS OF AMENDMENTS**

All Amendments have been entered.

**5. SUMMARY OF CLAIMED SUBJECT MATTER**

In general, the present application is directed to reducing odor using colloidal nanoparticles. See, e.g., Title. For example, independent claim 31 is directed to a substrate for reducing odor. See, e.g., pg. 2, line 33 – pg. 3, line 11. The substrate is porous and comprises a nonwoven, woven, or paper web. See, e.g., pg. 2, line 33 – pg. 3, line 11. The substrate further contains colloidal silica nanoparticles configured to adsorb one or more odorous compounds. See, e.g., pg. 2, line 33 – pg. 3, line 11. The silica nanoparticles have an average size of from about 1 to about 50 nanometers and a surface area of from about 50 to about 1000 square meters per gram. See, e.g., pg. 2,

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<sup>1</sup> Claims 31, 38, and 43-47 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting and claims 31, 43, 50, and 53 were rejected on the ground of nonstatutory obviousness-type double patenting. However, Appellants do not present these rejections for review. Appellants agree to submit terminal disclaimers to overcome the rejections upon a favorable decision from the Board with respect to the §103 rejections.

<sup>2</sup> Claim 46 was not explicitly rejected in the Final Office Action. However, Appellants believe this to be a typographical error for the reasons noted below in Footnote 3.

line 33 – pg. 3, line 11. The silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram. See, e.g., pg. 2, line 33 – pg. 3, line 11.

**6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

I. Claims 31, 35-43, 47, 48, 50, and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over EP1186854 (hereinafter "Honda") in view of U.S. Patent App. No. 2002/0006425 (hereinafter "Takaoa").

II. Claims 31, 35-46,<sup>3</sup> 48, and 50-53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda in view of Takaoa and further in view of WO 03/025067 (hereinafter "Beaverson").

III. Claims 31, 35-43, 50 and 53 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Honda in view of Takaoa and further in view of U.S. Patent No. 5,762,643 (hereinafter "Ray").

**7. ARGUMENT**

Appellants respectfully submit that the presently pending claims are patentable over the cited references and rejections.

**I. Claims 31, 35-43, 47, 48, 50, and 53 are patentable over Honda in view of Takaoa.**

Honda is directed to a fiber structure including a complex oxide comprising titanium and silicon in addition to a binder. The complex oxide is utilized as a photocatalyst to decompose odorous compounds.

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<sup>3</sup> The Final Office Action did not include any ground for rejection regarding claim 46. However, the Final Office Action additionally did not indicate that claim 46 was allowable. As such, Appellants believe this to be a typographical error. The Office Action dated February 27, 2008 included a §103 rejection of claim 46 in view of the Beaverson reference. Thus, Appellants will include claim 46 in the §103 combination that includes the Beaverson reference. Claim 46 is not argued individually herein.

Takaoa is directed to a photoreactive agent for removing harmful materials. The photoreactive agent comprises a photoreactive semiconductor and organic fine particles coated with inorganic fine particles.

**A. Independent claim 31 is patentable over Honda in view of Takaoa.**

Independent claim 31 recites:

A substrate for reducing odor, said substrate being porous and comprising a nonwoven, woven, or paper web, said substrate containing colloidal silica nanoparticles configured to adsorb one or more odorous compounds, said silica nanoparticles having an average size of from about 1 to about 50 nanometers and a surface area of from about 50 to about 1000 square meters per gram, wherein the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram.

**1. Honda and Takaoa fail to teach a substrate containing colloidal silica nanoparticles configured to adsorb one or more odorous compounds.**

To establish a *prima facie* case of obviousness, in addition to other requirements, the prior art references when combined must teach or suggest all the claim limitations. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). As noted above, independent claim 31 contains the limitation that the substrate contains colloidal silica nanoparticles configured to adsorb one or more odorous compounds. Neither Honda nor Takaoa teach such a limitation.

As noted above, Honda is directed to a photocatalyst; specifically, a complex oxide containing titanium and silicon. Honda discloses that the invention's primary function is to decompose malodorous compounds rather than simply adsorb them:

There are also known deodorants which utilize physical adsorption, such as active carbon and silica. **However, with these, the malodorous compounds are adsorbed and not decomposed, so they do not fundamentally resolve the situation.** Ideally, it is necessary that

malodorous compounds be completely decomposed to odorless components. Pg. 2, ¶ [0005], ll. 30-32 (emphasis added).

Honda gives further reasons why the invention is not configured to only adsorb odorous compounds:

In the case of fibre structures which have been subjected to such deodorant processing, **the adsorbed components may themselves give rise to a bad smell** or the malodorous components may be changed by decomposition into other components which themselves produce a strange smell. Pg. 2, ¶ [0007], ll. 44-46.

Thus, Honda utilizes a photocatalyst in order to decompose odorous compounds.

The Office Action correctly acknowledges that Honda fails to disclose Appellants' claimed silica nanoparticles. Nevertheless, in an attempt to render Appellants' claims obvious, the Office Action cites Takaoka as teaching the use of Snowtex-AK silica nanoparticles. First, Appellants respectfully submit that Takaoa is additionally not "configured to adsorb" odors as claimed by Appellants. Takaoa notes:

In the case of this gas adsorbability, the gas adsorption is physical adsorption and is in thermal equilibrium. Therefore, when the temperature of the carrier is raised by light irradiation, harmful materials adsorbed on the carrier without light irradiation are released and at the same time, **decomposed** by the photoreactive semiconductor supported on the carrier. ¶ [0119]

Thus, like Honda, Takaoa seeks to decompose gaseous compounds rather than adsorb.

Furthermore, Takaoa fails to teach one skilled in the art that the Snowtex particles are even capable of any kind of odor control, let alone adsorption. Takaoa teaches that the photoreactive agent "comprises a layer containing a photoreactive semiconductor and organic fine particles coated with inorganic fine particles." ¶ [0017] Indeed, the only use disclosed by Takaoa for the inorganic fine particles (of which

Snowtex is disclosed as a possibility) is simply to separate the photoreactive semiconductor from the organic fine particles: “the inorganic fine particle component is located between the photoreactive semiconductor and the organic fine particle component, so that the organic fine particle component can markedly avoid the strong influence of oxidative decomposition by the photoreactive semiconductor.” ¶ [0052] Thus, clearly, Takaoa is not remotely concerned with odor adsorption capability of the inorganic fine particles. One skilled in the art appreciates that silica nanoparticles surrounded by other components (i.e., photoreactive semiconductor and organic fine particles) may not even have sufficient “sites” for odor adsorption available.

**2. The Examiner improperly combines Honda with Takaoa.**

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a prima facie case of unpatentability.” In re Oetiker, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Furthermore, “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” KSR Int’l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007) (quoting In re Kahn, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)). Accordingly, even if all elements of a claim are disclosed in various prior art references, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” Id. Additionally, “[a] factfinder should be aware,



of course, of the distortion caused by hindsight bias and must be cautious of argument reliant upon ex post reasoning.” Id.

Appellants submit that one skilled in the art “having common sense” would simply not have reasonably considered incorporating Takaoa into Honda. Indeed, as noted above, Honda explicitly **teaches away** from adsorbing odor compounds as claimed by Applicants. As noted above, Honda teaches:

There are also known deodorants which utilize physical adsorption, such as active carbon and **silica**. **However, with these, the malodorous compounds are adsorbed and not decomposed, so they do not fundamentally resolve the situation.** Ideally, it is necessary that malodorous compounds be completely decomposed to odorless components. Pg. 2, ¶ [0005], ll. 30-32.

Thus, Honda, et al. teaches one of ordinary skill in the art that “deodorants . . . such as . . . silica” are not desired as they do not decompose as required. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. Furthermore, a “prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” M.P.E.P. § 2141.02.

In response to these arguments, the Office Action states, “Applicants’ remarks are based on the faulty premise that decomposition of odorous compounds and adsorption of such compounds are mutually exclusive. . . properly understood, what Honda teaches away from is not adsorption per se, but adsorption without decomposition.” Even if the Examiner’s statements were true, the Office Action admits that Honda teaches away from combining with Takaoa in such a manner. The Office Action notes, “it would be obvious here to replace Honda’s particles with the Snowtex-

AK of Takaoa, as both are recognized as odor adsorbing agents.” However, if the photocatalyst of Honda were replaced by Snowtex-AK disclosed in Takaoa, the ability to decompose the malodorous compound is lost. Thus, replacement of the photocatalyst with an odor adsorber as claimed by Applicants is explicitly taught against as noted in paragraph 5 of Honda reproduced above.

Furthermore, the Examiner seems to take the position that Takaoa recognizes Snowtex-AK as an odor adsorbing agent. Appellants respectfully disagree. As noted previously, Takaoa only discloses inorganic fine particles for the purpose of providing a separation between the photoreactive semiconductor and the organic fine particles. Indeed, the only mention in Takaoa for gas adsorption is by an optional carrier:

When there is used a carrier having gas adsorbability in itself, such as activated clay, zeolite, sepiolite and activated carbon among the above-exemplified carriers, the ability to remove harmful materials without light irradiation is also improved. In the case of this gas adsorbability, the gas adsorption is physical adsorption and is in thermal equilibrium. Therefore, when the temperature of the carrier is raised by light irradiation, harmful materials adsorbed on the carrier without light irradiation are released and at the same time, decomposed by the photoreactive semiconductor supported on the carrier. Of such carriers having gas adsorbability, there are carriers which preferentially adsorb a specific compound or either an acidic substance or a basic substance. Therefore, it is preferable to select the most suitable carrier from the above-exemplified carriers, depending on use conditions. ¶ [0119].

Plainly, the Examiner's only incentive or motivation for so modifying Honda using the teachings of Takaoa in the manner suggested in the Final Office Action results from using Appellant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art, which is improper under 35 U.S.C. § 103. Accordingly, it is respectfully submitted that any such modification of the cited references relies on the impermissible use of hindsight, which cannot be successfully

used to support a *prima facie* case of obviousness. One skilled in the art utilized common sense would not look to the disclosure of Takaoa and glean it obvious to replace the photocatalyst of Honda with the inorganic fine particles (and specifically Snowtex silica) of Takaoa.

**II. Claims 31, 35-46, 48 and 50-53 are patentable over Honda in view of Takaoa and further in view of Beaverson.**

While independent claim 31 is included in this rejection heading, it appears the Beaverson reference is cited as allegedly obviating the limitations of claims 44, 45, 51, and 52. Beaverson is directed to a barrier material that contains cyclodextrin and zinc nanoparticles.

**A. Independent claim 31 is patentable over Honda in view of Takaoa and further in view of Beaverson.**

- 1. Honda, Takaoa, and Beaverson fail to teach a substrate containing colloidal silica nanoparticles configured to adsorb one or more odorous compounds.**

Beaverson fails to remedy the deficiencies of Honda and Takaoa noted above.

Appellants incorporate their arguments in subheading **I.A.1.** here.

**2. The Examiner improperly combines Honda, Takaoa, and Beaverson.**

Beaverson fails to remedy the deficiencies of Honda and Takaoa noted above.

Appellants incorporate their arguments in subheading **I.A.2.** here.

**B. Dependent claims 44 and 45 are patentable over Honda in view of Takaoa and further in view of Beaverson.**

Dependent claim 44 depends from claim 43 which depends from independent claim 31. Claim 43 requires that an absorbent article comprises the substrate of claim 31. Claim 44 requires:

An absorbent article as defined in claim 43, further comprising at least one liquid-transmissive layer and a liquid-absorbent core, wherein said substrate forms at least a portion of said liquid-transmissive layer, said liquid-absorbent core, or combinations thereof.

Claim 45 depends from claim 44 and requires:

An absorbent article as defined in claim 44, wherein the absorbent article includes a liquid-transmissive liner, a liquid-transmissive surge layer, a liquid-absorbent core, and a vapor-permeable, liquid-impermeable outer cover, said substrate forming at least a portion of said liner, said surge layer, said absorbent core, said outer cover, or combinations thereof.

In the Office Action, the Examiner alleges that the limitations of claims 44 and 45 “are understood to be a general description of a diaper.” While one skilled in the art readily appreciates that the limitations of claims 44 and 45 are not necessarily restricted to diapers, even if true, the Examiner fails to point to any portion of Beaverson that allegedly obviates these limitations. As noted above, claims 44 and 45 require an absorbent article comprising a substrate with the limitations of claim 31. In stark contrast, the only mention in Beaverson of diapers, is disclosure that the improved barrier material can be utilized to wrap a soiled diaper for disposal. See, e.g., Abstract and pg. 1, line 1 – pg. 3, line 14. Contrary to that asserted in the Office Action, Beaverson fails to disclose any rationale to one skilled in the art to incorporate any type of odor control into a diaper. Indeed, Beaverson is simply a barrier wrap material for sealing odors.

**III. Claims 31, 35-45, 48 and 50-53 are patentable over Honda in view of Takaoa and further in view of Ray.**

While independent claim 31 is included in this rejection heading, it appears the Ray reference is cited as allegedly obviating the limitations of claim 47. Ray is directed to a barrier material that contains cyclodextrin and zinc nanoparticles.

**A. Independent claim 31 is patentable over Honda in view of Takaoa and further in view of Ray.**

1. Honda, Takaoa, and Ray fail to teach a substrate containing colloidal silica nanoparticles configured to adsorb one or more odorous compounds.

Ray fails to remedy the deficiencies of Honda and Takaoa noted above.

Appellants incorporate their arguments in subheading I.A.1. here.

**2. The Examiner improperly combines Honda, Takaoa, and Ray.**

Ray fails to remedy the deficiencies of Honda and Takaoa noted above.

Appellants incorporate their arguments in subheading I.A.2. here.

In conclusion, Appellants request favorable action and allowance of the presently pending claims.

Respectfully requested,

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## **8. CLAIMS APPENDIX**

1-30. (Canceled)

31. (Rejected) A substrate for reducing odor, said substrate being porous and comprising a nonwoven, woven, or paper web, said substrate containing colloidal silica nanoparticles configured to adsorb one or more odorous compounds, said silica nanoparticles having an average size of from about 1 to about 50 nanometers and a surface area of from about 50 to about 1000 square meters per gram, wherein the silica nanoparticles are relatively nonporous and thus have a pore volume of less than about 0.4 milliliters per gram.

32-34. (Canceled)

35. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles have an average size of from about 4 to about 20 nanometers.

36. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles have a surface area of from about 100 to about 600 square meters per gram.

37. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles have a pore volume of less than about 0.3 milliliters per gram.

38. (Rejected) A substrate as defined in claim 31, wherein the solids add-on level of said colloidal nanoparticles is from about 0.001% to about 20%.

39. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles cover at least about 50% of a surface of said substrate.

40. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles cover at least about 80% of a surface of said substrate.

41. (Rejected) A substrate as defined in claim 31, wherein said colloidal nanoparticles are coated onto a surface of said substrate, said coating having a thickness of less than about 1 micron.

42. (Rejected) A substrate as defined in claim 41, wherein said coating has a thickness of from about 2 to about 500 nanometers.

43. (Rejected) An absorbent article that comprises the substrate of claim 31.

44. (Rejected) An absorbent article as defined in claim 43, further comprising at least one liquid-transmissive layer and a liquid-absorbent core, wherein said substrate forms at least a portion of said liquid-transmissive layer, said liquid-absorbent core, or combinations thereof.

45. (Rejected) An absorbent article as defined in claim 44, wherein the absorbent article includes a liquid-transmissive liner, a liquid-transmissive surge layer, a liquid-absorbent core, and a vapor-permeable, liquid-impermeable outer cover, said substrate forming at least a portion of said liner, said surge layer, said absorbent core, said outer cover, or combinations thereof.

46. (Rejected) A paper product that comprises the substrate of claim 31.

47. (Rejected) A facemask that comprises the substrate of claim 31.

48. (Rejected) A substrate as defined in claim 31, wherein said silica nanoparticles are coated with alumina.

49. (Canceled)

50. (Rejected) A substrate as defined in claim 31, wherein said substrate has a porosity such that from about 20 to about 500 cubic feet of air is capable of flowing

through 1 square foot of said substrate per minute under a pressure differential of 125 Pascals.

51. (Rejected) A substrate as defined in claim 31, wherein said substrate is a paper web.

52. (Rejected) A substrate as defined in claim 31, wherein said substrate is a nonwoven web.

53. (Rejected) A substrate as defined in claim 31, wherein said silica nanoparticles consist essentially of silica or alumina coated silica.



**9. EVIDENCE APPENDIX**

None

10. **RELATED PROCEEDINGS APPENDIX**

None